

New data on the genus *Hermaea* (Mollusca: Sacoglossa) in Europe, with the description of a new species from Spain

Caballer^{1,2}, M. & Ortea³, J.

¹ Muséum National d'Histoire Naturelle, 55 rue de Buffon, 75005 Paris, France

² Centro de Oceanología y Estudios Antárticos. Instituto Venezolano de Investigaciones Científicas
Ctra. Panamericana Km 11, Miranda, Venezuela
manuelcaballergutierrez@hotmail.com

³ Departamento de Biología de Organismos y Sistemas, Facultad de Biología, Universidad de Oviedo
C/ Catedrático Valentín Andrés Álvarez, 33006 Oviedo, Asturias, Spain
jorte@uniovi.es

*Corresponding author: mcaballergutierrez@mnhn.fr

ABSTRACT

Hermaea bifida (Montagu, 1815) is the most widespread of the species of *Hermaea* Lovén, 1844 known in the Eastern Atlantic. Its distribution ranges from Sweden to Spain and the Mediterranean Sea. In Europe, any translucent Hermaeidae with red pigmentation in the digestive and auriculate rhinophores is usually determined as *H. bifida*. A new species of the genus from the north of Spain, cryptic with *H. bifida*, and traditionally determined as such, is described in this paper. This new species is characterized by a typical pattern of red bands, the digestive gland inside the cerata not forked distally, and stylet-shaped teeth, lacking lateral expansions. In addition, the amplitude of the distribution of *H. bifida* is discussed, in the context of the disruption caused by the discovery of the new species from the north of Spain.

Key words: Gastropoda, Hermaeidae, *Hermaea bifida*, sibling species, Eastern Atlantic, Biscay Bay.

RESUMEN

Hermaea bifida (Montagu, 1815) es la especie más común de *Hermaea* Lovén, 1844 conocida en el Atlántico Este. Su distribución abarca desde Suecia hasta España y el mar Mediterráneo. En Europa, cualquier Hermaeidae translúcido con pigmentación rojiza en el digestivo y rinóforos auriculados, es habitualmente determinada como *H. bifida*. En este artículo se describe una especie nueva de *Hermaea* del norte de España, críptica con *H. bifida*, y tradicionalmente confundida con la misma. Dicha especie se caracteriza por su patrón típico de bandas rojas, el digestivo en el interior de los ceratas, que no se bifurca en el

extremo distal, y por presentar dientes radulares en forma de estilete sin expansiones laterales. Adicionalmente la amplitud de la distribución de *H. bifida* es discutida en el contexto de la disrupción causada por el descubrimiento de esta nueva especie en el norte de España.

Key words: Gastropoda, Hermaeidae, *Hermaea bifida*, especie críptica, Atlántico Este, Mar Cantábrico.

1. INTRODUCTION

The genus *Hermaea* Lovén, 1844 is composed by little and cryptic herbivorous sea slugs with auriculate rhinophores, cerata lacking albumen gland, the digestive gland visible through the skin and uniseriate radula. The genus was established by LOVÉN (1844) to include *Doris bifida* Montagu, 1815 and *Hermaea venosa* Lovén, 1844. This nomenclatural act initiated a taxonomic hassle, given that *H. venosa* is indeed a junior synonym of *Calliopoea dendritica* Alder & Hancock, 1843, the type species of *Placida* Trinchese, 1879. To solve the controversy, GRAY (1847) designated *Hermaea bifida* (Montagu, 1815) (Type locality: coast of Devon, England) as the type species of the genus *Hermaea*. Posteriorly, COSTA (1864) described the genus *Physopneumon* Costa, 1864 from the Gulf of Naples, which resulted synonymous to *Hermaea*.

In addition to the complex taxonomical history of the genus, it is worth noting that the original description of *D. bifida* done by MONTAGU (1815) was not very precise (Figure 1 B). Therefore, ALDER & HANCOCK (1851) gave a detailed account on the species (Figures 1 C-D), which allowed giving stability to the name. In the last 170 years, *H. bifida*, a very cryptic and elusive snail, has been recorded in nearly all Europe: from the British islands (ALDER & HANCOCK, 1851: Fam. 3, Pt. 39), the Shetland Islands (PLATTS, 1985), Sweden (LOVÉN, 1844) and the Netherlands (VAN BRAGT, 2004), to the Iberian Peninsula (CERVERA, CALADO, GAVAIA, MALAQUIAS, TEMPLADO, BALLESTEROS, GARCÍA-GÓMEZ & MEGINA, 2006). In the Mediterranean the distribution of the species span to Italy (SCHMEKEL & PORTMANN, 1982), where, the first records are due to *Physopneumon carneum* Costa, 1864, the type species of *Physopneumon*, considered to date synonymous to *H. bifida* (PRUVOT-FOL, 1954; SCHMEKEL & PORTMANN, 1982). The records of *H. bifida* from Western Atlantic (ESPINOSA & ORTEA, 2001; VALDÉS, HAMANN, BEHRENS & DUPONT, 2006) have been rejected by CABALLER & ORTEA (2013).

ORTEA (1977a) and CABALLER (2007) collected several specimens of *Hermaea* in the Biscay Bay which were misidentified as *H. bifida* for more than 35 years. A comparative study on their anatomy demonstrated that this name could not be applied. The aim of this paper is to distinguish these specimens from *H. bifida* and describe them as a new species. Additionally, the distribution of the older species is discussed, due to this discontinuity in the north of Spain, which opens the possibility that *Hermaea carneum* (Costa, 1864), in the Mediterranean, is a valid taxa.

2. MATERIAL AND METHODS

The specimens were obtained by examination of algae collected by wading, snorkeling or scuba diving at several localities in Cantabria and Asturias from 1975. The external anatomy and coloration pattern of each specimen was studied using a stereoscopic microscope, photographed and preserved in ethanol 96%. Radula and genital apparatus were extracted from selected specimens, then, the radula was cleaned using NaOH to dissolve remaining tissues, rinsed with clean water and mounted in microscopy slides with glycerin. The genital apparatus was directly mounted for observation under the optical microscope. Specimens of *H. bifida* were loaned by NHMUK and dissected to compare de external and internal anatomy. **Abbreviations:** JOC-Jesus Ortea Collections, Noreña, Asturias, Spain. MCC-Manuel Caballer Collections, Boo de Pielagos, Cantabria, Spain. MNHN-Muséum national d'Histoire naturelle, 55 rue Buffon, 75005 Paris, France; NHMUK-Natural History Museum, Cromwell Road, London, UK. TFMC-Museo de Ciencias Naturales de Tenerife, Organismo Autónomo de Museos, Santa Cruz de Tenerife, Canary Islands, Spain.

3. SYSTEMATICS

Family HERMAEIDAE H. Adams & A. Adams, 1854

Genus *Hermaea* Lovén, 1844

Type species: *Doris bifida* Montagu, 1815: *Transactions of the Linnean Society of London* 11: 179-204. Type by subsequent designation by GRAY (1847). Type locality: coast of Devon, England.

Hermaea bifida (Montagu, 1815)

(Figures 1 A-D, 2 F-G, H-I)

Synonymy: ?*Physopneumon carneum* Costa, 1864: 158-159, pl. 2, fig. 9.

Material examined: Northern Ireland: Doctor's Bay, Strangford Lough Co. Down, on *Griffithsia setacea*, july 1976 (NHMUKAcc.2316, 1 ethanol), determined by Elizabeth Platts; Ave near P. E. Bay, no date provided (NHMUKAcc.2364, 1 ethanol), determined by T. E. Thompson. (Table 1).

Diagnosis: Oral appendages present. Cerata with little warts on the surface. Central axis of the digestive gland inside the cerata wrapped in a transparent sheath and branched all along its length; branches ramified and forked distally, near the surface of the cerata. Body crystalline to reddish with pigment sometimes concentrated on the head. Rhinophores greenish. Teeth sabot-shaped with smooth lateral expansions. Radular formula: 29-34 × 0.1.0 in specimens 5-10 mm long fixed. Penis unarmed.

Description: Up to 20 mm. Body elongated, narrow, stylized in the adults, translucent to yellowish green, with disperse opaque white granules (Figure 1 A-D) (MONTAGU, 1815;

ALDER & HANCOCK, 1851; ALDER & HANCOCK, 1845-1855; VAN BRAGT, 2004). This granules concentrated in the apex of rhinophores and cerata, head and cardiac area. Foot translucent and bilobated anteriorly. Oral appendages present. Rhinophores yellowish green dorsally, auriculate, with the upper lobe bigger than the lower and a dark reddish tinge in the anterior and posterior sides. Anterior end of the head and inter-rhinophoric space usually with an epidermic reddish tinge, that can be absent in some specimens (Figure 1 A) such as the one shown by MONTAGU (1815), in the original description (Figure 1 B). Eyes behind the rhinophores, in a mask-shaped depigmented area (Figure 1 C). Dorsum, laterals of the body under the cerata and foot translucent or bearing irregular red blotches.

Cerata elongated and wider on the distal third, crystalline with a red tinge that can be absent and with little warts all along the surface, independently from the digestive branches (Figure 1 D). Apex pointed, surrounded by 4 epidermic tubercles. Dorsum translucent or with irregular red blotches; before the first cerata they usually show a red blotch. Digestive gland in the dorsum pink to dark red, composed of two longitudinal branches, which can join together in the anterior end and in the tail or not. When they join anteriorly (specimens 18-20 mm long: ALDER & HANCOCK, 1851: Fam. 3, Pt. 39-3; ALDER & HANCOCK, 1845-1855 [Atlas]: Fam. 3, Pt. 39-3), they may show a central cerata. Up to 25 cerata on each side of the body. Digestive gland inside the cerata, with ramified branches all along the central axis. Branches forked when they reach the internal surface (Figures 1 D, 2 F-G). Tail long, pointed. Anus stalked, dorsal, on the anterior side of the cardiac area. Gonopore below and behind of the right eye. Penis unarmed.

Radular formula $29-34 \times 0.1.0$. in 2 specimens 5 and 10 mm long from Ireland, with 5 teeth in the ascending series, 19-24 in the descending series, 4 in the ascus and 1 tooth in development (Figure 2 H). Last tooth of the ascending series 127-169 μm long. Functional tooth 127-152 μm . Radular teeth sabot-shaped (Figure 2 I), composed of a rectangular base with two projections on its back and a blade-shaped functional part with smooth lateral expansions. ALDER & HANCOCK (1845-1855: pt. 47 supplementary, fig. 31) and THOMPSON (1976) described specimens from England with a radular formula $35-49 \times 0.1.0$. and teeth up to 170 μm .

Biology: Gregarious, typical from shallow and cold water. They may emit a substance with an unpleasant odor to hydrogen sulfide or *Geranium robertianum* (LOVÈN, 1844; HECHT, 1895; VAN BRAGT, 2004). It has been recorded on *Griffithsia setacea* (ALDER & HANCOCK, 1851; ALDER & HANCOCK, 1845-1855; this paper), *Delesseria* sp., *Griffithsia* sp., *Heterosiphonia* sp. (THOMPSON, 1976; THOMPSON & BROWN, 1976), *Delesseria hypoglossum* (GARSTANG, 1890), *Dasysiphonia* spp. and on filamentous green algae such as *Bryopsis* spp. (VAN BRAGT, 2004) or even on the hydroid *Tubularia* spp. (LOVÈN, 1844).

The spawn is spiral, with eggs up to 48-54 μm , and can be observed from summer to the beginning of autumn (Alder and Hancock 1851; Alder and Hancock 1845-1855; Thompson 1976; Van Bragt 2004).

Distribution: In Eastern Atlantic from British Isles (ALDER & HANCOCK, 1851), Shetland Islands (PLATTS, 1985) and Sweden (LOVÈN, 1844) to the Netherlands (VAN BRAGT, 2004).

Remarks: The poor original description of *D. bifida* by MONTAGU (1815) was based in a 6 mm long specimen (Figure 1 B). This description was completed in detail by ALDER & HANCOCK (1851), who used 20 mm specimens, and by THOMPSON (1976). It has been observed that the color pattern of *H. bifida* shows certain variability. In the Netherlands, this species is found in water temperatures from close to 0°C to 22°C, and the color morphs apparently depend on the species of red algae that may be eaten, in combination with water temperature: the colder it gets, the more transparent the specimens are and the less red pigment is present, although that effect may be caused by less feeding activity (Van Bragt personal communication).

On the other hand, the most of the records out of Sweden, British Islands or the Netherlands, are not accompanied by data on the anatomy of the specimens or, when they are, they do not exactly fit in the description of *H. bifida*. This is also the case of the specimens of “*H. bifida*” from the Biscay Bay that are described as a new species in this paper. Thus, all the records of *H. bifida* in the Iberian Peninsula (CERVERA *et al.*, 1988; CALADO *et al.*, 2003; CERVERA *et al.*, 2006) need detailed anatomical studies for confirmation. The records in the Mediterranean are treated in the discussion. FEZ (1974) records *Hermoea bifida* (misspelling) in Valencia (Mediterranean coast of Spain), but, he shows and describes a species of *Hermaea* remarkably different from *H. bifida*. CABALLER & ORTEA (2013) revised the genus *Hermaea* in Western Atlantic, concluding that all the records to *H. bifida* in the Caribbean (ESPINOSA & ORTEA, 2001; VALDÉS *et al.*, 2006) must be rejected.

***Hermaea cantabra* n. sp.**

(Figures 1 E-H, 2 A-E, J-K)

Type material: **Holotype**, February 7, 2004, MNHN-IM-2000-27684. **Paratype**, February 7, 2004, TFM/11315;MO/05143, M. Caballer. Type locality: Intertidal of Isla de la Torre, Santander, Cantabria, Spain, 43°27'55.85"N, 3°46'16.23"W, M. Caballer, J. Ortea.

Material examined: Spain, Cantabria, Santander, Isla de la Torre, 43°27'55.85"N, 3°46'16.23"W, intertidal, M. Caballer: September 17, 2001 (MCC, 2 ethanol); October 17, 2001 (MCC, 1 ethanol); May 16, 2003 (MCC, 1 ethanol); January 22, 2004 (MCC, 2 ethanol); February 7, 2004 (MCC, 5 ethanol); March 7, 2004 (MCC, 2 ethanol); March 8, 2004 (MCC, 1 ethanol); April 4, 2004 (MCC, 4 ethanol). Isla de la Torre, 43°27'55.05"N, 3°46'18.43"W, 5 m depth, May 11, 2003 (MCC, 9 ethanol). North face of Isla de Mouro, 43°28'25.05"N, 3°45'22.37"W, 15 m depth, July 26, 2001 (MCC, 1 ethanol). El Calo, 43°28'24.29"N, 3°45'26.66"W, 15 m depth, July 30, 2004 (MCC, 7 ethanol). Spain, Asturias, Verdicio, 43°37'32.98"N, 5°52'46.84"W, intertidal: July 11, 1975, J. Ortea (JOC, 2 ethanol); August 10, 1976, J. Ortea (JOC, 10 ethanol); September 20, 1978, J. Ortea (JOC, 2 ethanol).

Etimology: *Hermaea cantabra*, named to honor Cantabria, the region where the type locality is located, and their inhabitants.

Diagnosis: Oral appendages absent. Cerata smooth. Digestive gland inside the cerata unwrapped, branches not forked. Body translucent with a typical pattern of bands. Teeth stylet-shaped, lacking lateral expansions. Radular formula: 31-39 × 0.1.0 in specimens 2-8 mm long alive. Penis unarmed.

Description: Up to 9 mm (Table 1). Body translucent to translucent white, with red to brown spots on the dorsum, laterals and tail. Digestive gland reddish brown to light brown (Figure 1 E-H). Sides of the body with an epidermic pattern composed of reddish brown narrow lines (Figures 1 H, 2 B, 2 E): from the rhinophore to mid body, a second branch from the base of the rhinophore to the sole of the foot and from there to the tail. Foot slightly bilobated anteriorly. Rhinophores auriculate, with the upper lobe tapered distally, slightly rounded and higher than the lower. Rhinophores and cerata with opaque white granules. An epidermic reddish brown line runs from the posterior side of the rhinophores to the first cerata and from the anterior side to the snout (Figure 2 A). Eyes behind rhinophores. Digestive gland in the dorsum composed of two separated main branches, which can join in the tail or not. Each of them with secondary T-shaped branches that never join with the other side (Figure 2 A). Cerata elongated and piriform, sometimes ovoid, with a subtle reddish tinge. Apex conical. Digestive gland inside the cerata form a central axis branching in oblique or at right angles, except at the base. Axis not wrapped in a transparent sheath. Branches simple, not forked distally, and not reaching the internal surface of the cerata, however, tubercles raise in this area. Cardiac area triangular, opaque white, perimeter outlined by reddish brown spots. Disperse reddish spots from cardiac area to the tail. Tail long, sometimes longer than the later cerata. Anus dorsal, not stalked, attached in the anterior side of the cardiac area. Gonopore lateral, between the base of the right rhinophore and the first cerata. Penis unarmed.

Radular formula $28-39 \times 0.1.0.$ for 4 specimens 2-8 mm long from Santander Bay, with 5-7 teeth in the ascending series, 17-25 in the descending series, 3-5 in the ascus and 1-2 teeth in development. Last tooth of the ascending series $52-87 \mu\text{m}$ long. Functional tooth $49-77 \mu\text{m}$. Radular teeth stylet-shaped, composed of a rectangular base and a stylet-shaped functional part, lacking lateral expansions. Blade slightly sawed, almost invisibly.

Biology: The specimens from Santander and Asturias inhabit shallow waters (0-15 m), generally in the limit of the lowtide. They can be found mainly on *Codium tomentosum* with epiphytic red filamentous algae or on *Ceramium* spp. It is found together with *Hermaea paucicirra* Pruvot-Fol, 1953.

The spawn of *H. cantabra* n. sp. has been briefly described by ORTEA (1977a: as *H. bifida*), as a white open spiral of 1 whorl and a half and 2.5 mm diameter, with 500 eggs in 5 rows.

Distribution: From Asturias, Spain (ORTEA, 1977a & b) to Arcachon Bay, France (SALVAT, 1968).

Remarks: *H. cantabra* n. sp. can be distinguished from all of the Atlantic congeners by its typical epidermic pattern of red lines. Only *Hermaea nautica* Caballer & Ortea, 2007, a species endemic to Cuba, share a similar pattern. *H. nautica* has smooth lemon-shaped cerata with unbranched digestive gland inside and opaque white granules arranged in two bands, oral appendages present, unbranched digestive gland in the dorsum and 13 radular teeth (CABALLER & ORTEA, 2007), different from *H. cantabra* n. sp.

H. bifida is distinguished from *H. cantabra* n. sp. by bearing oral appendages; by the digestive gland inside the cerata, branched all along the axis, forked near the internal surface and wrapped in a transparent sheath; by the absence of an epidermic pattern of red bands and by the sabot-shaped teeth with lateral expansions.

H. paucicirra is characterized by its whitish body, with a mask-shaped red blotch on the eyes area and red pigment on the dorsum that prevents to see the digestive gland, the bunch-shaped digestive gland inside the cerata, that are ovoid, smooth and covered by red pigment and the penis armed with a dart-shaped structure, different from *H. cantabra* n. sp.

Hermaea boucheti Cervera, García-Gómez & Ortea, 1991 is distinguished from *H. cantabra* n. sp. by the color of its body, yellowish-green; the presence of oral appendages; the branches of the digestive gland in the dorsum, joining together anteriorly; the central cerata between the head and the cardiac area; its prominent anal papilla; and by the sabot-shaped teeth with lateral expansions. In addition, *H. boucheti* lacks the epidermic pattern of red bands typical of *H. cantabra* n. sp.

Some specimens of *H. cantabra* n. sp. from Asturias were captured by ORTEA (1977a & b), who identified them as *H. bifida*, the only species with the digestive ramified inside the cerata, that was considered valid at this time in Europe. SALVAT (1968: on *Codium fragile*) and PODDUBETSKAIA (2014) record *H. bifida* from Arcachon Bay, based on several specimens of *H. cantabra* n. sp. In addition, this species has been frequently misidentified with *H. paucicirra* (NEMBRO, 2014), with whom it can be found.

4. DISCUSSION

Five species of *Hermaea* are known in Eastern Atlantic: *H. bifida*, *H. paucicirra*, *Hermaea boucheti*, *Hermaea ghanensis* Caballer, Ortea & Moro, 2006 and *H. cantabra* n. sp. Nearly all of them inhabit the Iberian Peninsula (except for *H. ghanensis*), which is apparently a buffer zone between the fauna from the cold waters from northern Europe and the temperate fauna from the Mediterranean and northern Africa.

H. bifida has the smallest eggs known in Sacoglossa (THOMPSON, 1976; JENSEN, 2001: together with *Placida dendritica*), this shall mean a great dispersibility, but in more than 35 years of fieldwork in the Biscay Bay (ORTEA, 1977a; CABALLER, 2007), only two species of *Hermaea* have been found: *H. paucicirra* and *H. cantabra* n. sp. (as *H. bifida*). The wide distribution attributed to *H. bifida* has at least one disruption between Asturias and the southern coast of France; more than 600 km of shoreline with temperate waters, different from those out of Biscay Bay. Thus, the records referring to *H. bifida* in Spain and Portugal shall be checked, given the differences between the Mediterranean and the Atlantic waters. In addition a revision of the records of *H. bifida* in the Mediterranean and a comparison with samples from northern Europe is more than advisable. If significative differences were found, the available name for the Mediterranean populations would be *H. carneum*, considered a junior synonym of *H. bifida* to the present.

Hermaeopsis variopicta Costa, 1869 is a species of Hermaeidae which inhabits the north of Spain. The genus *Hermaeopsis* Costa, 1869, is close to *Hermaea* and it has been considered a junior synonym by some authors, but it is distinguished by the radically different color pattern; flattened cerata; bilobed velum; asymmetric digestive glands; vestibular gland in the genital apparatus; and a characteristic type of teeth.

5. ACKNOWLEDGMENTS

To David Reid, Kathy Way and Amelia MacLellan, from the Natural History Museum, London, for their kindness and help and for the loan of the specimens of *H. bifida*. To Peter Van Bragt, for letting us using his photos of the living specimens of *H. bifida* from the Netherlands and for his valuable comments on the anatomy of the species. To Niels Schrieken, Director of BiOrganized and Coordinator of MOO-project St. Anemoon, for his help with the data on *H. bifida*. To our friend and colleague Juan Carlos Canteras. The first author holded a PhD grant from the University of Cantabria, while doing this work.

6. REFERENCES

- ALDER, J. & A. HANCOCK. 1851. *A monograph of the British nudibranchiate Mollusca: with figures of all the species* Part 5: Fam. 1, Pts. 1, 2, 12, 15, 16 & 22; Fam. 2, Pt. 4; Fam. 3, Pts. 5, 16, 17, 27, 37, 39 & 43. Ray Society, London.
- ALDER, J. & A. HANCOCK. 1845-1855. *A monograph of the British nudibranchiate Mollusca: with figures of all the species Vol. I (Atlas)*. Ray Society, London.
- CABALLER, M. 2007. *Catálogo de los sacoglossos y opistobranquios (Mollusca: Gastropoda) de sustrato rocoso de la Bahía de Santander. Revisión de los géneros con especies crípticas*. PhD Thesis, University of Cantabria, Spain, 500 pp.
- CABALLER, M. & J. ORTEA. 2007. Nueva especie del género *Hermaea* Lovén, 1844 (Mollusca: Sacoglossa), de la costa norte de La Habana, Cuba. *Avicennia* 19: 127-132.
- Caballer, M. & Ortea, J. 2013. The genus *Hermaea* Lovén, 1844 (Mollusca: Sacoglossa) in the Caribbean, with the description of a new species from Cuba. *Revista de la Academia Canaria de Ciencias. Biología*, XXV: 67-78.
- CALADO, G., M.A.E. MALAQUIAS, C. GAVAIA, J. L. CERVERA, C. MEGINA, B. DAYRAT, Y. CAMACHO, M. POLA & C. GRANDE. 2003. New data on opisthobranchs (Mollusca: Gastropoda) from the southwestern coast of Portugal. *Boletín del Instituto Español de Oceanografía*, 19 (1-4): 199-204.
- CERVERA, J.L., G. CALADO, C. GAVAIA, M.A.E. MALAQUIAS, J. TEMPLADO, M. BALLESTEROS, J.C. GARCÍA-GÓMEZ & C. MEGINA, C. 2006. An annotated and updated checklist of the opisthobranchs (Mollusca: Gastropoda) from Spain and Portugal (including islands and archipelagos). *Boletín Instituto Español de Oceanografía*, 20(1-4): 3-122.

- CERVERA J. L., J. C. GARCIA-GOMEZ & J. ORTEA. 1991. Una nueva especie del género *Hermaea* (Gastropoda: Opisthobranchia: Sacoglossa) y redescrición de dos raros sacoglossos de la malacofauna europea. *Iberus* 8 (2): 214-224.
- CERVERA, J.L., J. TEMPLADO, J.C. GARCÍA-GÓMEZ, M. BALLESTEROS, J.A. ORTEA, F.J. GARCÍA, J. ROS & A.A. LUQUE. 1988. Catalogo actualizado de los Opistobranquios (Mollusca, Gastropoda) de la Península Ibérica, Baleares y Canarias, con algunas referencias a Ceuta y las islas de Alborán. *Iberus*, supplement 1: 1-84.
- COSTA, A. 1864. Di un nuovo genere di molluschi gasteropodi rincenuto nel Golfo di Napoli. *Annuario del Museo Zoologico della Universita di Napoli*, 2(4): 158-159.
- ESPINOSA, J. & J. ORTEA. 2001. Moluscos del mar Caribe de Costa Rica. *Avicennia*, supplement 4: 1-76.
- FEZ, S. 1974. *Ascoglossos y Nudibranquios de España y Portugal*. ISBN 84-400-7559-6. Centro de Biología Aplicada, Institución “Alfonso el Magnánimo”, CSIC, Valencia, 325 pp.
- GARSTANG, W. 1890. A complete list of the Opisthobranchiate Mollusca found al Plymouth with further observations on their morphology, colours and natural history. *Journal of the Marine Biological Association of the United Kingdom*, 1: 399-457.
- GRAY, J.E. 1847. A list of the genera of recent Mollusca, their synonyma and types. *Proceedings of the Zoological Society of London*, 15: 129-219.
- HECHT, E. 1895. Contribution à l'étude des nudibranchs. *Mémoires de la Société Zoologique de France*, 8: 539-711.
- LOVÉN, S.L. 1844. Om nordiska halfs-mollusker. *Ofversigt af Kongl. Vetenskaps Akademiens Forhandlingar*, Stockholm, 1(3): 48-53.
- MONTAGU, G. 1815. An account of some new and rare marine British shells and animals. *Transactions of the Linnean Society of London*, 11: 179-204.
- NEMBRO. 2014. *Hermaea bifida*. Available online at: http://www.nembro.info/Opisthobranchia/uk_hermaea_bifida.html. [Accessed on 2014-06-14].
- ORTEA, J.A. 1977a. *Moluscos marinos gasterópodos y bivalvos del litoral asturiano entre Ribadesella y Ribadeo, con especial atención a la subclase de los Opistobranquios*. PhD Thesis, University of Oviedo, Spain.
- ORTEA, J.A. 1977b. Contribución a la actualización de la fauna de Opistobranquios Ibéricos. Sacoglossos. *Boletín de la Estación central de Ecología*, 6(11): 75-91.
- PLATTS, E. 1985. Appendix: An annotated list of the North Atlantic Opisthobranchia. **In:** Just, H. & Edmunds, M. (Eds.), North Atlantic nudibranchs (Mollusca) seen by Henning Lemche, with additional species from the Mediterranean and the north east Pacific. *Ophelia*, supplement 2: 151-170.
- PODDUBETSKAIA, M. 2014. *Hermaea bifida*. Available online at: http://www.med-slugs.de/E/Atl-E/Hermaea_bifida/Hermaea_bifida_07.htm/. [Accessed on 2014-05-14].
- PRUVOT-FOL, A. 1954. Mollusques Opisthobranches. **In:** Lechevalier, P. (Ed.), *Faune de France*, Paris, 58: 183-185.
- SALVAT, F. 1968. *Hermaea paucicirra* Pruvot-Fol, 1953 (Mollusca, Gastropoda, Opisthobranchia, Sacoglossa). *Bulletin du Muséum national d'Histoire Naturelle*, Paris, 2nd series, special number, 40(2) : 358-365.

SCHMEKEL, L. & A. PORTMANN. 1982. *Opisthobranchia des Mittelmeeres. Nudibranchia und Saccoglossa*. Springer-Verlag, Berlin.

THOMPSON, T.E. 1976. *Biology of Opisthobranch Molluscs, Vol I*. Ray Society, London.

THOMPSON, T.E. & G.H. Brown. 1976. *British Opisthobranch Molluscs*. Academic Press, London.

VALDÉS, A., J. HAMANN, D. BEHRENS, D. & A. DUPONT, A. 2006. *Caribbean Sea Slugs. A Field Guide to the Opisthobranch Mollusks from the Tropical Northwestern Atlantic*. Sea Challengers, Gig Harbor, U.S.

VAN BRAGT, P.H. 2004. The sea slugs, Sacoglossa and Nudibranchia (Gastropoda, Opisthobranchia), of the Netherlands. *Vita Malacologica* 2, 3-32.

Table 1. Dimensions (in millimeters) of the specimens studied.

	Specimen length alive	Specimen length fixed
<i>H. bifida</i> NHMUKAcc.2316	—	5
<i>H. bifida</i> NHMUKAcc.2364	—	10
<i>H. cantabra</i> Holotype MNHNIM2000-27684	5	2.6
<i>H. cantabra</i> Paratype TFMC/11315;MO/05143	4	2
<i>H. cántabra</i> , 48 additional specimens		
Maximum	9	—
Minimum	1	—
Mean	3.4	—

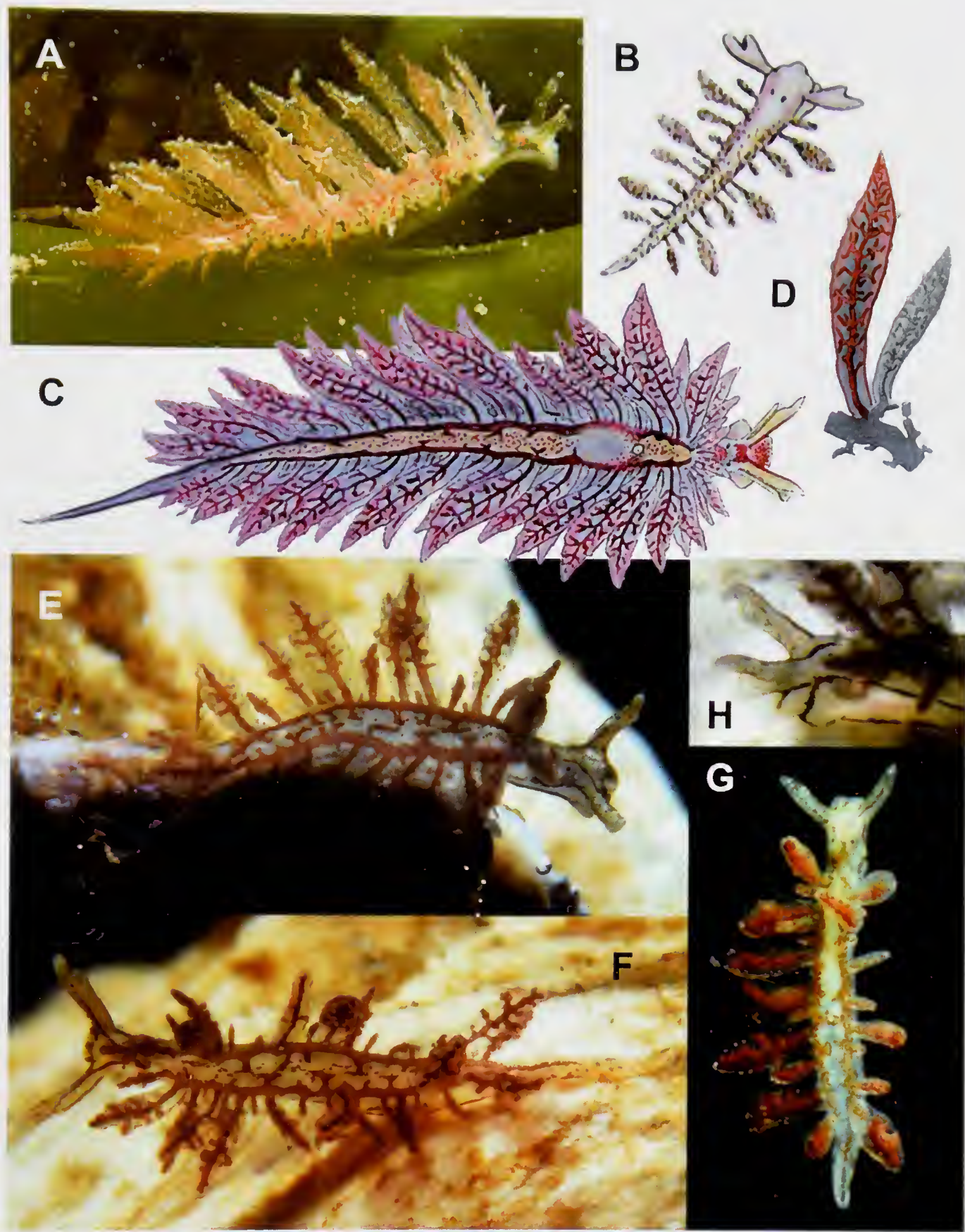


Figure 1. A-D, *Hermaea bifida* (Montagu, 1815). A, Specimen 15 mm long from the Netherlands (courtesy of Peter Van Bragt); B, Iconotype, 6 mm long (Montagu 1815); C-D, Illustrations by Alder and Hancock (1845-1855); C, Dorsal view of a specimen 20 mm long; D, Detail of the cerata with the forked digestive gland inside; E-H, *Hermaea cantabra* n. sp.; E, Dorso-lateral view of the paratype, TFM/11315;MO/05143; F, Dorsal view of the holotype, MNHNIM2000-27684; G, Specimen 2 mm long from Verdicio, Asturias; H, Detail of the color pattern in the left side of the head in a specimen 8 mm long from type locality.

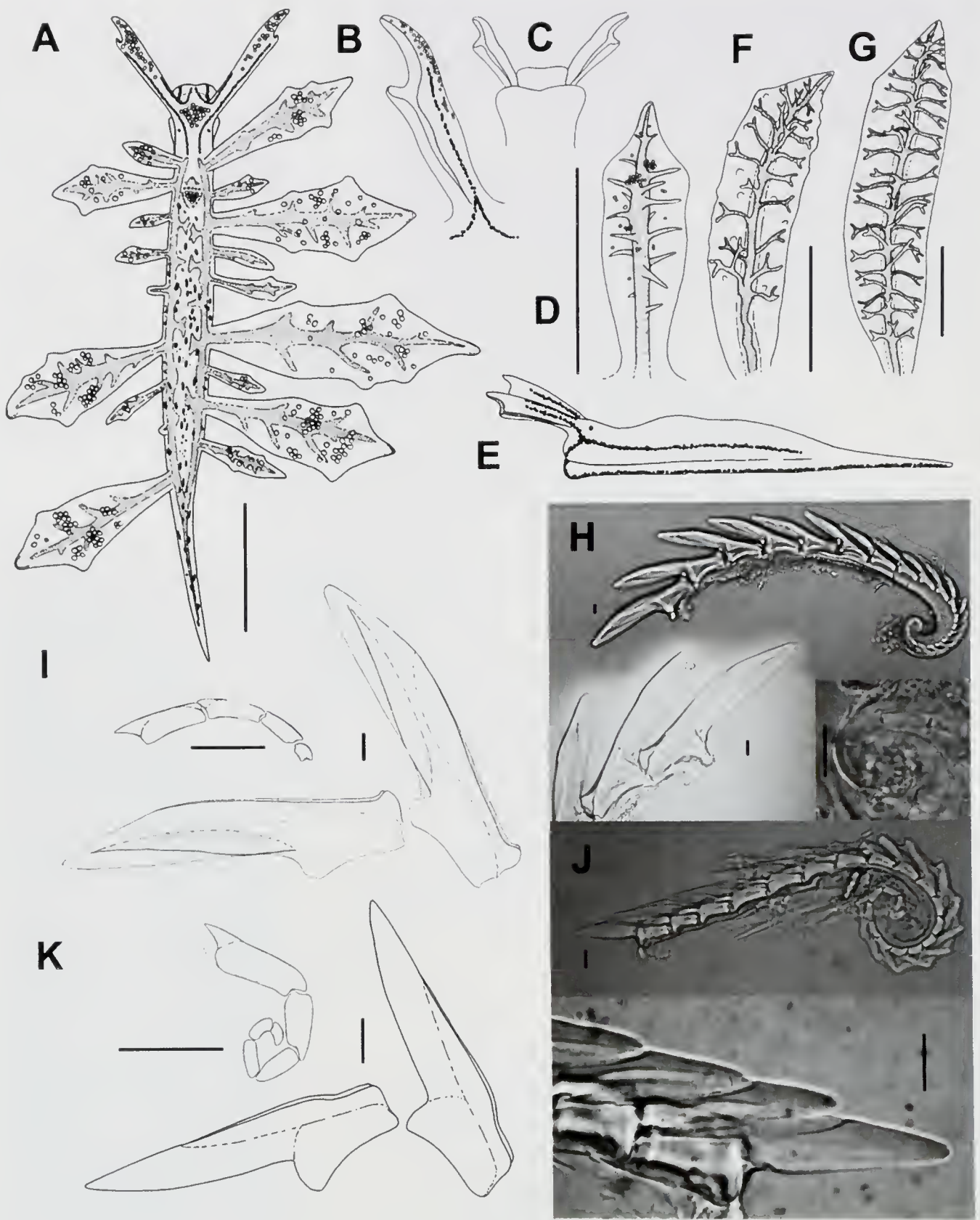


Figure 2. A-E, J-K, *Hermaea cantabra* n. sp. A, Scheme of the typical characters of the species in dorsal view; B, Lateral view of the rhinophore; C, Ventral view of the sole of the foot; D, Scheme of the cerata; E, Scheme of the color pattern in lateral view; J, Descending series of the radula and detail of the functional tooth; K, Ascus, last tooth of the ascending series and functional tooth; F-G, H-I, *Hermaea bifida* (Montagu, 1815) 5 mm long (fixed) from Doctor's Bay, Northern Ireland. F-G, Schemes of the cerata; H, Descending series of the radula and details of functional tooth and ascus; I, Ascus, last tooth of the ascending series and functional tooth. Scales: A, D, F, G, 1 mm; H-K, 10 µm.